EXAMINING THE EFFECTS OF ANIMAL ASSISTED INTERVENTIONS ON THERAPEUTIC ALLIANCE AND ANXIETY

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ABSTRACT

EXAMINING THE EFFECTS OF ANIMAL ASSISTED INTERVENTIONS

ON THERAPEUTIC ALLIANCE AND ANXIETY

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Beginning in the early 1900s, dogs were incorporated in psychiatric settings, and expanded throughout all healthcare settings by the turn of the 21st century (Chandler, 2012; Miller, 2004). As animal therapy and animal assisted interventions gained attention throughout media, it also gained attention throughout practice and research. The research covers many domains and applications. Previous research has found that the presence of animals has been associated with increases of social behavior and communication among various populations and environments, decreases in self-report anxiety and physiological measures of anxiety such as heart rate, blood pressure, and cortisol levels, and increases regarding patient-client attitudes toward therapists (Leung & Fung, 2014; Schneider & Harley, 2006; Schuck, Emmerson, Fine, & Lakes, 2015; Soban, 2008). As intriguing as the research may be, and while the overwhelming majority of the research produces positive results, the research is not without limitations and criticisms. There are many research deficiencies among animal assisted therapy and animal assisted interventions research including insufficient and homogeneous sample sizes, a lack of standardized procedures allowing for replication, a lack of a non-treatment control group, and an overwhelming reliance on self-report measures while lacking objective measures (Herzog, 2014). This study investigated the effects of the presence of a therapy dog on anxiety and therapeutic alliance and this study addressed the limitations expressed in previous research by utilizing a large,

generalizable sample, a controlled study with standardized measures for replicability, and the findings are based on objective measures in addition to self-report measures. Inter-rater reliability was addressed by training all researchers for consistency and personality was evaluated as a possible covariate influencing the results. Due to this study maintaining a large focus on anxiety, mindfulness was incorporated as an intervention to address anxiety. Because there is a lack of research regarding incorporating therapy dogs with mindfulness, the presence of a therapy dog's influence on the effects of mindfulness on anxiety was examined.

CHAPTER 1: INTRODUCTION

The appeal of the human-animal relationship is something that has been around for years, whether it was having pets of our own, getting excited to go to the zoo as a child, or teachers using books such as *Old Yeller, Charlotte's Web,* and *Where the Red Fern Grows* to teach children important life lessons through stories of having and loving animals. Therefore, it comes as little surprise that animals have also been incorporated into our lives therapeutically. Animals have been therapeutically implemented in a variety of settings, serving different functions. While the use of animals, particularly dogs, was originally found in psychiatric settings, using animals has expanded its acceptance in nearly all healthcare settings, including nursing homes to motivate, alleviate depression, and encourage mental fitness, rehabilitation facilities to encourage participation and motivation for physical exercises, and therapeutic environments to enhance emotional comfort (Miller, 2004).

Human-animal interaction used as emotional therapy is believed to have begun in the early 20th century in the United States. Former U.S. Secretary of the Interior, Franklin K. Lane suggested in 1919 that dogs be incorporated into socializing with patients in Saint Elizabeths Hospital in Washington, D.C., which was previously known as the Government Hospital for the Insane (Chandler, 2012). Beyond the psychiatric settings, Animal Asssisted Therapy (AAT) began to grow in popularity at the turn of the century. In the early 1990s and 2000s, healthcare journals published several experiments documenting the benefits of AAT in a variety of health care settings ranging from diverting attention during painful procedures to reducing stress in patients and visitors within hospice care setting. AAT continued to grow in the late 1990s and 2000s as the public received greater exposure of AAT through mainstream media such as newspapers, magazines, and television, resulting in school systems and counselors seeking out

AAT (Chandler, 2012). In 2008, the American Psychological Association (APA) formed a new section addressing AAT, making the APA the front-runner of national health organizations formally recognizing animal therapy. The following year in November of 2009, The American Counseling Association governing council approved the establishment of animal therapy in mental health interest network as well (Chandler, 2012). With animal therapy becoming formally recognized, the exploration and expansion of safe and effective AAT research and practice has taken place within the field of mental health. Current research regarding AAT and Animal Assisted Interventions (AAIs) in mental health has grown to cover various goals, populations, settings, stages of the therapeutic process, and treatment interventions.

Animal Assisted Interventions/Animal Assisted Therapy

Substantial literature exists regarding the implementation of animals for supportive interventions and the terms Animal-Assisted Therapy and Animal-Assisted Interventions are often used interchangeably and synonymously. According to the American Veterinary Medical Foundation (2017), Animal-Assisted Therapy can be defined as "a goal directed intervention in which an animal meeting specific criteria is an integral part of the treatment process" and Animal-Assisted Interventions as "the utilization of various species of animals in diverse manners beneficial to humans" (p. 5). An example of Animal Assisted Therapy would be implementing the presence of a dog to motivate a physical therapy client to exercise by asking the client to stand while brushing the dog's back and eventually increase the client's ambulation skills to eventually walking with the dog for short distances around the facility, and in contrast, an example of an Animal Assisted Intervention would be implementing a dog as a common conversation piece to enhance the initial social interaction between two strangers. AAT and AAI can be differentiated by the duration and purpose of the use of the animal.

AAT/AAI is currently a very active area of research, including a wide array of client populations, therapeutic settings, and therapeutic processes. For example, AAT/AAI has been linked to reductions in Attention-Deficit/Hyperactivity Disorder symptomatology, reduction in other problematic behaviors, improved social skills, and improved communication (Schuck, Emmerson, Fine, & Lakes, 2015). Children diagnosed with Autism Spectrum Disorder exhibited increases in verbal communication (Leung & Fung, 2014). A body of research suggests that AAT/AAI can reduce physiological and emotional stress responses while enhancing communication and interpersonal functioning (e.g., Schneider & Harley, 2006). On the other hand, this literature has been heavily criticized. In the following section the major criticism and limitations of existing studies are described.

Current Limitations of AAIs and AAT Research

While there is a growing amount of research and support regarding animal assisted therapy and animal assisted interventions, and that the overwhelming majority of this research presents measurable benefits of the AAIs and AATs, there are many research deficiencies among these studies such as insufficient sample sizes to produce reliable results, a lack of standardized procedures that allow for replication, a lack of a non-treatment control group, and an overwhelming reliance on self-report measures while lacking objective measures (Herzog, 2014).

Due to an increase of recent interest regarding the potential medical or therapeutic value of animal companionship, many studies have since been prompted that demonstrate either short-term relaxing effects, or long-term health improvements with animal contact or animal companionship as social support (Fine, 2010). However, despite these findings, the positive therapeutic value of animal companionship is immensely under-supported and under-recognized in mainstream medical literature and as a field of research. Boris M. Levinson (1969) produced

several writings to support and justify the implementation of animal assisted interventions (AAIs). His book, *Pet-Oriented Child Psychotherapy* addressed and described the benefits that a dog provided to his counseling sessions with children (Levinson, 1969), however, while this writing was to inform and encourage future research, it was based primarily on case studies, lacking valid efficacy studies (Fine, 2010). Despite the positive media attention and the growing acceptance of AAIs among both public and professionals, AAIs are "best described as a category of promising complimentary practices that are still struggling to demonstrate their efficacy and validity" (Fine, 2010 p. 33).

According to Herzog (2015), evidence of the efficacy of animal assisted therapy does not lie on a firm empirical foundation due to the lack of replicability, the "file drawer problem," lack of sufficient sample and effect sizes, and the lack of a control group, just to name a few. Ioannidis (2005) agrees that AAT research presents inconsistent findings by failing to produce replicable studies and studies with large heterogeneous samples. The "file drawer effect," while not unique to animal therapy research, is the tendency for negative research outcomes to never be published, and to just "wind up in the researcher's filing cabinet rather than in the pages of a scientific journal" (Herzog, 2011 p. 238). Beyond the publication biases, there are also design problems within human-animal interaction studies such as the trend that many animal therapy studies rely on self-report measures that tend to produce less reliable results than more objective indices of health would (Herzog, 2011). In addition, the methodological design of the majority of animal assisted therapy research lacks standardized, replicable measures. While many AAT studies produce statistically significant findings, it is often that these results are misleading when the sample and effect size are taken into consideration. Most studies have insufficient sample sizes and some effect sizes as low as Cohen's d of .15 to .20 (Cohen, 1988). In these cases, it is

likely that the AAT treatment in investigation had very little practical therapeutic impact even though the findings may have been statistically significant (Herzog, 2015).

Similarly, Schuck and colleagues (2015) expressed multiple limitations and that future research should include a larger sample size, more objective measures, more structured methods, blind raters rather than potentially biased parental ratings, and examination of physiological responses related to stress such as heart rate, salivary cortisol, and activity level. Additionally, Fung and Leung (2014) noted a key limitation to their study was it utilized a small sample size of only ten participants. While measures were taken to try to minimize the potential negative effects of the small sample size such as matched sampling and random assignment, larger sample sizes would be necessary for a higher probability of detecting statistically significant group differences.

With these important criticisms and limitations in mind, the following sections include a brief overview of the existing literature, such as it is, followed by a discussion of mindfulness as a potentially useful construct in gaining a better understanding of the role of AAIs in therapeutic progress. We reviewed studies that examine the impact of AAT/AAIs on social behavior and communication, physiological indicators of stress and anxiety, the impact of AAT/AAIs on psychological indicators of trauma, stress, and anxiety. Mindfulness and therapeutic alliance are introduced as key constructs in the current research.

Social Behavior and Communication

Social interaction and communication, both verbal and nonverbal, are important to human connection throughout various populations and environments. In 2014, Leung and Fung investigated the role of therapy dogs in facilitating social interaction among children diagnosed with autism. A therapy dog was in an experimental group of children involved in individual

sessions of social interaction therapy and was compared with a group of children that used a doll as a dog surrogate. The primary goal of this study was to determine if animal-assisted play therapy could enhance social interaction among children with autism. The preliminary finding suggested that the children with autism produced small but statistically significant increases in the verbal social behavior when the dog was present (Leung & Fung, 2014). While this study relied heavily on potentially biased raters and informants, it supported some of the previously recognized benefits of animals as a "social lubricant," a "social ice-breaker," and as a "social catalyst" (Chandler 2012; Corson & Corson, 1980; Erickson 1985;). Prothmann, Ettrich, and Prothmann, (2009) also found that children with autism interacted more frequently and for more extended periods of time than when compared to people or objects. In addition to autism, children with other developmental disorders exhibited more playful interactions with dogs than when compared to toys and they were also more aware of their social environment as well (Martin & Farnum, 2002).

Other psychological disorders have also been found to have social improvements when exposed to animal-assisted therapy. For example, adult patients with schizophrenia showed improvement in social contact, symptoms, and quality of life related to social relationships, and among psychiatric inpatients, significant social interactions such as smiles, sociability, activation, responsiveness, and helping others, increased over time with rehabilitation including animals (Marr et al., 2000; Villalta-Gil et al., 2009;). In addition, Schuck, Emmerson, Fine, and Lakes, (2015) examined the influence of canine-assisted interventions on 24 children with ADHD. The 24 children were randomly assigned to either a cognitive-behavioral group therapy incorporating a dog, or a cognitive-behavioral group therapy without a dog. For 12 weeks, each child participated twice a week in an intervention group therapy session and were then assessed

by multiple scales that measured ADHD symptomatology, problematic behaviors, social skills, and social competence. Schuck and colleagues (2015) reported that both treatment groups reported improvements regarding social skills, prosocial behaviors, and problematic behaviors. In addition, both groups showed a decline in ADHD symptoms, with children who received the canine-assisted intervention cognitive-behavioral group therapy exhibiting greater declines in the severity of ADHD.

Physiological

Using physiological measures to examine effects of AAT and AAIs on anxiety provides valuable objective results and has been incorporated throughout the literature. Dickstein (1998) had previously addressed physiological responses related to stress and anxiety, such as salivary cortisol levels, along with a self-report rapport measure. Interactional synchrony, affective displays, and other-rated rapport measures were reported by judges who viewed videotapes of face-to-face interactions among the participants. In half of these interactions, a dog was present, which was found to lower salivary cortisol levels in participants who already owned a dog as a pet. The presence of a dog tended to influence an increase of rapport overtime, as the non-dog groups' level of rapport remained the same (Dickenstein, 1998). While Dickenstein addressed the physiological response of salivary cortisol levels, others related to stress and anxiety in regards to AAT and AAIs have yet to be included in research.

Additional research supports that the presence of animals has multiple physiological effects on humans. Odendaal and Meintjes (2003) found that interacting with dogs, rather it was a personal pet or an unfamiliar dog, resulted in a significant decrease of human cortisol levels. This result was also found when Beetz et al. (2011) examined the decreased cortisol level of children with insecure attachment who were socially supported by a dog rather than socially

supported by a human. Lower epinephrine and norepinephrine levels were measured among adults hospitalized with heart failure during and after a visit with a dog, than compared to the usual hospital care (Cole et al., 2007). A substantial amount of research has addressed the effects of human-animal interactions on blood pressure and heart as well (Beetz, Uvnäs-Moberg, Julius, & Kotrschal, 2012). Friedman et al. (1983) found that blood pressure was significantly lower in children that were in the presence of a dog the entire time while they were reading, than when the dog was only present for the second half of their reading time and Demello (1999) found a significant reduction of heart rate among adults recovering from a cognitive stressor when the adults were allowed to pet a dog when compared to when a dog was not present.

Additionally, Blender (2010), investigated the impact of a therapy dog on physiological reactivity, participant ratings of anxiety, rapport with the interviewer, and motivation. To do so, 42 college students were subjected to a semi-structured interview, measurements of physiological measurements including heart rate and blood pressure, and self-report questionnaires regarding their experience of anxiety, rapport, motivation, bond with the therapy dog or their own pet, and their personality traits. The findings included greater reductions in blood pressure when the dog was present when compared to when the dog was absent, and suggests that AAIs may be considerable use for people with anxiety and particular personality traits such as neuroticism (Blender, 2010).

Anxiety / Trauma

Anxiety is a very common aspect of human life, whether it be occasional anxiety as a result from stress, or more severe anxiety as a result from trauma, anxiety is a common topic of research throughout the literature. Shiloh, Sorek, and Terkel (2003) found that only petting a live animal, rather than a toy, reduced self-reported state anxiety among adults who were told that

they may have to hold a tarantula which sparked some fear and anxiety. Similarly, psychiatric patients awaiting electroconvulsive therapy reported significantly lower levels of stress, anxiety, and fear when interacting with an animal (Barker, Pandurangi, & Best, 2003). As previously mentioned, Blender (2010) also found that the presence of a therapy dog decreased physiological effects of anxiety including heart rate and blood pressure as well as participant self-reported anxiety among 42 college students.

In addition, AAT and AAIs have expanded their involvement into the treatment interventions as well. Dietz, Davis, and Pennings (2012) evaluated AAT in group therapy treatment among children who had experienced sexual abuse. Their study used a sample of 153 children that were divided into groups of six to 10 children, among several different locations. The measures included therapy dogs and storytelling as part of the therapeutic process and were applied to an experimental group therapy session that contained either one or both of the measures. Pretest and post-test measurements were utilized to assess any possible effects on multiple dimensions of trauma. Their evaluation of the comparison between the three types of group therapy showed that dogs with stories and dogs without stories showed a significant reduction from pretest to posttest in trauma symptoms including anxiety, depression, anger, PTSD, dissociation, and sexual concerns (Dietz, Davis, & Pennings, 2012). While this study provides support for efficacy of incorporating AAT in group therapy with sexually abused children, this study fails to utilize random assignment and standardized procedures, failed to have consisted baseline scores and failed to account for observed changes that may have been due to the passage of time or due to lack of standard variables associated with different locations, particular dogs, and their handlers (Dietz, Davis, & Pennings, 2012).

Mindfulness

Mindfulness is a concept rapidly gaining attention from both clinicians and the research literature and has recently gained popularity in regard to its effects on anxiety and as a possible treatment intervention. Mindfulness, described as "paying attention in a particular way, on purpose, non-judgmentally, to the present moment" (Kabat-Zinn, 1994, p. 4), can be implemented to decrease stress and anxiety (Shearer, Hunt, Chowdhury, & Nicol, 2016). Positive correlations exist between mindfulness and emotional intelligence, self-esteem, life satisfaction, positive affect, vitality, and others in addition to positive personality traits such as openness to experience (Baer, Smith, Hopkins, Krietemeyer, & Tony, 2006; Brown & Ryan, 2003). Mindfulness interventions has recently gained popularity within the emotional and behavioral sciences of the Western culture as an increasingly popular framework for psychopathology by being incorporated into treatment approaches for a variety of mental disorders including, but not limiting to, anxiety (Roemer, Orsillo, & Salters-Pedneault, 2008). Despite the growing interest regarding mindfulness, the processes in which it expels its benefits of alleviating symptoms require further research (Mankus, Aldao, Kerns, Wright Mayville, & Mennin, 2013).

In regards to research related to AAT and AAIs, there is limited literature that incorporates therapy animals with mindfulness. The majority has compared, not combined, the two variables of therapy animals and mindfulness. For example, Shearer, Hunt, Chowdhury, and Nicol (2016), used a sample of stressed college students, randomly assigned them to a treatment group utilizing a brief mindfulness meditation exercise, an active control group utilizing exposure to a therapy dog, and a no-treatment control group. The active treatment and active control groups were exposed to their group for four, one hour, weekly sessions. After the final week, both the dog group and the mindfulness group exhibited significantly lower levels in state anxiety and dysphoric affect than the no treatment control group (Shearer, Hunt, Chowdhury, &

Nicol, 2016). While this study found significant findings within the mindfulness group as well as the dog group, the study lacked examining the variables combined in a single treatment group to compare outcomes.

Beyond the realm of AAT, Burg and colleagues (2012) examined the relationship of heart rate variability and mindfulness in hopes to find a physiological correlate between mindfulness and self-regulation. Their hypothesis was supported in that the participants that were able to self-regulate their attention to breathing during the mindful breathing exercise displayed significantly higher values on two of the three indices of heart rate variability. Their findings may be suggestive of heart rate variability, a physiological indicator of self-regulation, psychological and physical health and adaptation, may serve as a correlate of self-regulating aspects of mindfulness, thus indicating that a mindful state is associated with beneficial physiological processes promoting well-being.

Similarly, Mankus and colleagues (2013) examined the relationship between mindfulness and heart rate variability in regard to elevated generalized anxiety symptoms. It was found that the participant's general anxiety level moderated the relationship of mindfulness and heart rate variability, suggesting the support for including mindfulness in treatments for general anxiety.

The Therapeutic Alliance / Therapeutic Rapport

As AAT and AAIs have been shown to benefit individuals' social development and communication, it includes the communication between a mental health professional and their client which is part of the therapeutic process. Factors of that therapeutic process that have been researched with the incorporation of AAT and AAIs include the clinical interview, the client attitude and experience, and the development of an early working alliance. Soban (2008) explored the impact of therapy dogs on client-patient attitudes. Students were involved in a pre-

arranged and open-ended interview that was used to illicit responses regarding the lived experience. The findings suggested that the utilization of dogs in the therapeutic process had a positive effect yet this study was conducted from a sample size of eight 18 to 21-year-old participants. Additionally, Schneider and Harley (2006), found that college students rated psychotherapists depicted with a dog as more trustworthy than psychotherapists without a dog. Participants, particularly those with the least positive attitudes toward psychotherapists, reported more general satisfaction with the therapist with the dog and also reported more willingness to disclose personal information. It is important to note that not all research supports these findings such as Cieslak (2001) found that the presence of a therapy dog did not have any impact on client ratings of working alliance or perceived counselor credibility when sampled from 26 randomly assigned students between the ages of 17 and 23.

The development of an effective therapeutic alliance between a therapist and a client has been known to be one of the most reliable predictors of positive psychotherapy outcomes across a wide variety of clients, problems, and treatments (Flückiger, Del Re, Wampold, Symonds, Horvath, 2012). Also, a universal component of mental health treatment, the concept of alliance has been a growing topic of interest and research over the past three decades (Karause, Altimir, & Horvath, 2011). Within the literature, therapeutic alliance and working alliance are often used interchangeably. However, for this study, we define therapeutic alliance as developing trust and respect to foster an environment in which the client feels safe to improve their chances of successful therapeutic outcomes. Additionally, we define working alliance as the degree to which the client and therapist are engaged in collaborative work and we will be referring to it as therapeutic alliance.

Most research regarding therapeutic alliance focuses on its relationship to therapeutic outcomes or the working alliance built over time (Thomas et al., 2017; Hentschel, 2005). Hentschel (2005) states that it is necessary to keep the therapeutic and working alliance separate conceptually and empirically, yet the majority of empirical studies have difficulties not mixing the alliance-building as a treatment strategy with its role as a predictor for outcome. Unfortunately, it is very often that there is not the opportunity of additional appointments to work toward those goals or build an alliance over time. Baekeland and Lundwall (1975), found that in a general psychiatric clinic, up to 57% of patients fail to return after the first session and that up to 75% of those seeking treatment for alcoholism will not return beyond the fourth session, yet there is a significant positive relationship found between the alliance and therapist experience and the patient stay. Thus, it can be assumed that it is important to provide a positive experience and develop an effective therapeutic alliance early within treatment.

Brown and Akakpo (2014), examined the role of enhancing rapport and therapeutic alliance among previously detained youth. After defining rapport "as how a mental health professional is able to connect in ways that builds trust with youth clients" (p. 199), it was found that using rapport and developing a therapeutic alliance before delving into the previously detained youth's traumatic issues was necessary for therapeutic success. Brown and Akako (2014) continued to suggest that the delay of the development of a therapeutic alliance has negative consequences such as the "shut down" of the therapeutic process, the non-resolution of issues, a negative view of the mental health system, and the decrease in likelihood that the clients will seek help in the future. Key components of a strong therapeutic alliance have been evaluated such as empathy, client-directed care and sequencing, mental health self-disclosure, humor, and rapport (Brown & Akakpo, 2013) and measures for working alliance have been developed such

as the Working Alliance Inventory (Horvath & Greenberg, 1986), but there are gaps in the research in ways to measure and enhance that initial rapport and therapeutic alliance that are empirically supported.

Purpose

The purpose of this study was to examine the effect of an animal assisted intervention on the short-term development and perception of therapeutic alliance, as well as an individual's perceived anxiety. This study aimed to address the critiques of previous AAI and AAT literature by providing a substantial, generalizable sample including a control group, standardized measures to allow for replicability, and to provide findings based on objective measures in addition to self-report measures.

This study provided more evidence for the overall validity and reliability regarding the efficacy of animal assisted therapy. This study addressed the fundamental concerns related to previous animal-assisted research through the use of a large, heterogeneous sample size, experimental and control conditions, standardized and manualized measures to allow for future replicability, objective physiological measures, and self-report measures of anxiety and working alliance. Additionally, inter-rater reliability was addressed by training all researchers for the consistency and there was additional follow-up ratings to address consistency and any deviations identified.

Previous research has shown that the presence of a therapy dog tends to elicit friendly social interaction, including conversation, empathy, and trust. Thus, it was predicted that the presence of the therapy dog will result in higher scores, compared to the control group, on the measure of therapeutic alliance. Previous research has also shown that the presence of a therapy dog tends to lower anxiety and reduce heart rate, thus it was predicted that the experimental

group will exhibit lower levels of state anxiety than the control group and it was predicted that the experimental group will exhibit lower heart rate than the control group. Finally, the M5-120 was incorporated to explore the possibility of personality as a confounding variable between the effect of the presence or non-presence of a therapy dog on working alliance and anxiety.

Testable Hypotheses

1. The experimental group (dog present) will report higher levels of self-report therapeutic alliance than the control group.

2a. The experimental group (dog present) will exhibit lower levels of self-report anxiety than the control group.

2b. The experimental group (dog present) will exhibit lower heart rate than the control group.

3. An exploratory analysis will examine the five domains of personality as covariates of the effects of therapy dogs on perceived working alliance.

CHAPTER 2: METHODS

Participants

The sample consisted of undergraduate students, at least 18 years of age. A power analysis was conducted by G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) and 86 participants was needed, 43 for each condition. Participants were recruited from the Psychology 150 SONA recruitment research pool and received research credit for participation. Participants who reported cynophobia, allergies to dogs, or a history of cardiac conditions or arrhythmia were excluded.

Measures

Heart Rate

Fitbit Charge 2. The Fitbit Charge 2 is a wearable wristband that serves as a fitness activity tracker and heart rate monitor. The Fitbit Charge 2 uses PurePulse technology that uses light sensors to monitor blood flow through the individual's wrist in order to calculate the heart beats per minute (Cipriani, 2016). According to Cipriani, (2016), the Fitbit is an accurate measure of heart rate, within three beats per minute of a chest strap monitor, when worn correctly. The Fitbit was utilized throughout the entire study. Time stamps were recorded upon arrival, before the structured interview, following the interview, and following the mindfulness exercise. These timestamps were then paired with the timestamps of the recorded heart rate.

State Anxiety

The Line Marking Scale. The Line Marking Scale is a one-item self-report scale that consists of a continuous horizontal line, on which a participant would draw an "x" to mark their level of a described or defined item or construct. The distance between the beginning of the horizontal line and the "x" is then measured, quantified, and recorded. For this study, the

participant recorded their current level of anxiety upon that line, the distance was measured to the nearest millimeter, and then recorded. The participant was given the prompt, "When considering anxiety, defined as a feeling of worry, nervousness, or unease, please rate your current anxiety by placing an "X" on the appropriate area of the line below." A copy of this measure is provided in Appendix 1.1.

Personality

M5-120 Questionnaire (M5). The M5-120 Questionnaire (McCord, 2002) is a 120 item self-report personality measure that contains items scored on a 5-point ordered scale format with the responses: inaccurate, moderately inaccurate, neither, moderately accurate, accurate. The m5 identifies five domains including Neuroticism, Extroversion, Openness to Experience, Conscientiousness, and Agreeableness. The M5 Questionnaire is a Five Factor Theory of Personality (FFT) measure developed from the International Personality Item Pool (IPIP), a public domain consisting of many personality items (Goldberg, 1999).

Structured Clinical Interview

Anxiety and Related Disorders Interview Schedule for DSM-5 (ADIS-5): Client Interview Schedule. The ADIS-5: Client Interview Schedule is a structured interview that is designed to assess and/or diagnose current anxiety, mood, obsessive-compulsive, trauma, and related disorders (Brown & Barlow, 2014) according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria (American Psychiatric Association, 2013). The ADIS-5 has a dimensional variety of interview and screening questions that assess for multiple DSM-5 disorders. The list of interview questions included questions related to Social Anxiety Disorder, Specific Phobia, Obsessive Compulsive Disorder, and Generalized Anxiety Disorder such as "Over the last several months, have you been continually worried or anxious about a number of

events or activities in your daily life?," "What kinds of things did you worry about?," and "In what ways have these worries and associated symptoms of tension/anxiety interfered with your life?" The complete list of interview questions is provided in Appendix 1.2.

Alliance Measure

Working Alliance Inventory. The Working Alliance Inventory (WAI) is a 36-item self-report measure of the working alliance between a therapist and client, developed in 1986 (Horvath & Greenberg, 1986). The WAI originated from Bordin's theory of working alliance being defined as a combination of (a) the therapist and client's agreement on goals, (b) the therapist and client's agreement on tasks to achieve those goals, and (c) the development of an affective, personal bond between the therapist and client (Bordin, 1979). Each item is responded to using a 7-point ordered response scale format with responses: 1-never, 2-rarely, 3-ocassionally, 4-sometimes, 5-often, 6-very often, 7-always. The WAI has adequate validity and reliability and consisted of having an estimated alpha of .93 for the client version and .87 for the therapist version, based off of both expert rater agreement and empirical methods (Cronbach, 1951; Horvath & Greenberg, 1989). Due to the short-term nature of this study, and the lack of the long-term collaboration between the therapist and client, the 24 items related to goals and tasks were eliminated from the WAI. Only the 12 bond items were administered. The bond items administered from the Working Alliance Inventory are provided in Appendix 1.4.

Procedures

Once the participant signed up for a time slot to be involved in the study through the SONA system at Western Carolina University, a prescreen questionnaire was completed before confirmation of the time slot. As the study called for some psychophysiological assessment and possible interaction with an animal, prequalification screening requirements included an absence

of a history of a cardiac or heart rhythm condition, allergy to dogs, and fear of dogs. In addition to the exclusion criteria, a baseline rating of state anxiety was given. In order to reduce any confounding influence on the physiological measurements, the participant was informed not to drink coffee, smoke cigarettes, or engage in strenuous exercise for 30 minutes prior to coming to the study. A confirmation email was sent to the participant including the date, time, and location of the study. Participants were randomly assigned to the experimental condition or control group. Participants were asked to complete identical tasks and assessment measures including the structured clinical interview and mindfulness exercise, with the presence and availability of a therapy dog being the only difference for the experimental group. Demographics of the participant's age and sex were also collected.

Upon arrival, but prior to the structured clinical interview, the participant provided informed consent regarding the study, provided informed assent regarding the therapy dog's rights during all activities and tasks. Participants were also provided with the Fitbit for their wrist at this time. The participant's heart rate was recorded throughout and paired with timestamps that coincide with each task. The first timestamp was recorded when it is initially placed on the participant's wrist. The participant then completed the personality inventory and state anxiety measure. Following the collection of the initial baseline data by an administrator, the structured interview regarding their experience of anxiety took place. The interview was administered by the researcher in an office that promoted privacy. When the interview was complete, the participant again completed the state anxiety measure and their heart rate was recorded and timestamped. The participant then participated in a recorded 5 minute, 31 second audio brief mindfulness exercise, administered by the researcher. The transcript of the mindfulness exercise is provided in Appendix 1.3. Following the mindfulness exercise, the participant again

completed the state anxiety measure and their heart rate was recorded and paired with a timestamp. The experimental group of participants had a therapy dog available to them throughout this process. Finally, the participant completed the working alliance inventory. The measures are discussed in detail below.

Sufficient inter-rater reliability was attained by training all researchers for the consistency of the clinical interview. In addition, there was a follow-up rating to address consistency and any deviations identified.

Analyses

After compiling all of the data, the specific study aims were tested in several steps. First, to address hypothesis 1, an independent means t-test was ran to in order to determine if the presence of the therapy dog had an impact on the self-reported therapeutic rapport. Since a statistically significant difference was found, Cohen's d (Cohen, 1988) was be computed as the appropriate measure of effect size.

Second, to address hypothesis 2a, a repeated measures ANOVA was conducted to examine the effects of the presence of a therapy dog on self-reported anxiety. All measurements of the Line Marking Scale served as the dependent variable with one between-groups variable, the control verses the experimental group. Additionally, to address hypothesis 2b, a repeated measures ANOVA was conducted to examine the effects of the presence of a therapy dog on the participants' heart rate. All measurements of heart rate served as the dependent variable with one between-groups variable, the control verses the experimental group. Due to statistically significant differences being found, eta-squared (η^2; Cohen, 1966) was computed for effect size. Tukey's HSD (HSD; Tukey, 1953) was computed for the post hoc interval variable.

Lastly, in order to address the third hypothesis, prior to running the ANCOVA, reliability of the five covariates corresponding to the five factors were not established via Cronbach's alpha (Cronbach, 1951) before the analysis. The minimum acceptable level for reliability is 0.8, which was not achieved. Furthermore, it was important to ensure that each of the five factor scores correlated significantly with the WAI scores while showing only moderate correlations with each other. None of the five factor scores must have shown a linear relationship with the WAI scores. Due to more than one assumptions being violated, an ANCOVA was not effectively used to partial out the potential effects of personality factors (Pallant, 2010); instead a simple independent-means t-test was conducted on the two treatment conditions using the WAI scores as the dependent variable relying on the first hypothesis.

CHAPTER 3: RESULTS

Participants for the current study consisted of 33 male (40.2%) and 49 female (59.8%) undergraduate Introductory Psychology students from Western Carolina University. Data collection took place from 7 November 2017 to 6 December 2017. Participants ranged in age from 18 to 20 years, with an average of 18.48 years.

The independent means *t*-test for hypothesis 1 revealed a statistically significant higher level of self-reported therapeutic alliance for the experimental group (t=2.804; p=.006) compared to the control group. This test revealed a moderate effect size (d=0.577; Cohen, 1988). Refer to Appendix 2.1.

Hypothesis 2 was broken down into two measures of anxiety: self-report and heart rate. The analyses to address both hypothesis 2a and 2b violated Box's Test of Equality of Covariance Matrices and Levene's Test of Equality of Error Variances, so the Greenhouse-Geisser adjustment was used (Box, 1953; Howell, 2012; Levene, 1960). The repeated measures ANOVA for hypothesis 2a revealed no statistically significant difference between conditions (experimental and control), and no significant observed interactions, with regard to self-report anxiety. However, the data shows trends towards approaching significant differences in favor of our predictions in regard to the collection times of self-reported levels of anxiety regardless of condition, but did not meet criteria for a statistically significant difference (p=.08). The repeated measures ANOVA for hypothesis 2b revealed no statistically significant difference between conditions (experimental or control), and no significant observed interactions, with regard to heart rate. However, there was a significant difference between the first heart rate and the third heart rate among all participants regardless of condition (F=6.420; p=0.003). We observed good

power (.799) and a small effect size (eta squared = .062; Cohen, 1966). Refer to Appendix 2.2 and 2.3.

Tests of Simple Effects with Repeated Contrasts were ran to assess for any significant differences between the levels (pre, mid, and post) measurements of heart rate and self-reported anxiety. Referring to hypothesis 2a, there were no significant differences between any of the levels of self-reported anxiety within a condition group or regardless of condition groups. The difference between mid-anxiety and post-anxiety regardless of condition group approached significance (p=0.08). Referring to hypothesis 2b, there were no significant differences between the levels of heart rate within each condition group, however there was a significant decline in heart rate from mid-heart rate to post-heart rate, regardless of condition group. Refer to appendix 2.11 and 2.12.

Before using the ANCOVA to address hypothesis 3, an ANOVA was ran to see if personality could serve as a covariate of the differences by ensuring that there was statistically significant differences among the condition groups. The ANOVA supported the independent means t-test from hypothesis 1 by finding that the experimental group did report higher levels of therapeutic rapport than the control group. The difference was significant at p=0.006, meaning that there is a 0.6% chance that the observed difference was due to error. Eta squared reported a small effect size (.089), meaning condition can account for 8.9% of the observed difference, though the difference is significant (Cohen, 1966). The personality factors were then analysed as possible covariates with an ANCOVA. None of the five personality factors appeared to be significant covariates. Following the ANCOVA, the significance changed for the overall difference among condition groups to p=0.19, with eta squared being 0.71 (Cohen, 1966). These

findings suggest that when you control for personality differences, there is still a significant difference between condition groups. Refer to Appendix 2.9 and 2.10.

Additional independent means *t*-tests were ran to assess for any statistically significant differences between conditions among individual WAI questions. The independent means *t*-test revealed a statistically significant higher score by the experimental group on question 5 ("___ and I understand each other;" t=2.203; p=.030), question 19 ("___ and I respect each other;" t=2.879; p=.006), question 21 ("I am confident in ___'s ability to help me;" t=2.125; p=.037), question 23 ("I feel that ___appreciates me;" t=2.574; p=.012), question 26 ("___and I trust eone another;" t=2.996; p=.004), and question 28 ("My relationship with ___ is very important to me;" t=2.310; p=.028). There were also noticeably lower scores on question 29 ("I have the feeling that if I say or do the wrong things, ___ will stop working with me.") of the WAI (reverse coded indicating greater levels of working alliance) among the experimental group, though this difference was not quite statistically significant. Refer to Appendix 2.6 for statistical results and refer to appendix 1.4 for WAI question content.

CHAPTER 4: DISCUSSION

Substantial literature exists regarding the implementation of animals for supportive interventions therapeutically, however the current literature is heavily criticized. While there is growing support of animal assisted interventions and animal assisted therapy, the critiques include research deficiencies among these studies such as insufficient sample sizes to produce reliable results, a lack of standardized procedures that allow for replication, a lack of a non-treatment control group, and an overwhelming reliance on self-report measures while lacking objective measures (Herzog, 2014). The goal of the current study was to add to the growing literature surrounding AAI while addressing these deficiencies.

The focus of the current research is on AAI rather than AAT. AAT is a more global and complex process that includes the use of AAI as a specific intervention. Therapy itself is a process that is made up of a much broader framework dependent on a therapist's orientation. We are better able to control for the impact of the therapy animal outside of the broader orientation or framework by doing research on AAI. By conducting research on AAIs, we can account for the effects of the animal beyond the therapeutic orientation and skill level.

Though this current study fell slightly short of the ideal number of participants as assessed by G*Power (Faul, Erdfelder, Buchner, & Lang, 2009), this study still had nearly four times the number of participants as some of the leading literature in the field of AAI/AAT research. As mentioned above, Soban (2008) found that therapy dogs had a positive impact on the therapeutic process with regard to client-patient attitudes, yet this study only had eight participants. Cieslak (2001) also explored the impact of therapy dogs on client ratings of working alliance or perceived counselor credibility though only 26 participants were used. Thus, the large

sample size of the current study promotes greater confidence in the findings and serves as a valuable contribution to the current literature.

The sample size was substantial and divided among treatment and control groups. Objective measures, such as heart rate, were used in conjunction with a self-reported anxiety measure to observe participant anxiety throughout the session. Standardized measures and procedures were implemented. Additionally, consistency was addressed through training and rating for inter-rater reliability, using identical environments, and using only female researchers and similar therapy dogs.

The participants within the treatment group, who were in the presence of the therapy dog, reported higher levels of therapeutic alliance, supporting our first hypothesis. Personality factors were not found to serve as covariates with regard to the difference of reported therapeutic rapport. When controlling for the five personality facets as measures by the M5-120, there is still a significantly higher reported therapeutic alliance among the experimental group. This suggests that having a dog present could improve the formation of therapeutic rapport regardless of the individual's personality type and the utility of this finding could promote the inclusion of therapy dogs as a treatment modality and increase or expedite the formation of therapeutic rapport. As stated by Hentschel (2005), psychotherapy is merely a social interaction between two persons and therapeutic rapport could be regarded as one of the essential psychotherapy variables. As Baekeland and Lundwall (1975) found that over half of the clients in a general psychiatric clinic failed to return after their first session, it is important that an effective therapeutic alliance be formed early within treatment. The current study showed increased levels of therapeutic rapport among the first, and only session when in the presence of a therapy dog. These findings support Soban (2008) who found that the utilization of therapy dogs improve client-patient attitudes, as

well as supports Schneider and Harley (2006) who found that college students rated psychotherapist depicted with a dog as more trustworthy than psychotherapists without a dog. The current study not only supports the prior literature, it adds confidence within the results due to the larger sample size. There is also more confidence that these differences are due to the presence of the dog since the sample size was heterogeneous, including a control group.

In review of specific WAI questions, there were statistically significant higher scores by the experimental group on several individual questions. Among those questions with significant differences between condition groups, were questions relating to a client's vulnerability. Question 26 ("___and I trust each other."), question 23 ("I feel that ___ appreciates me."), and question 29 ("I have the feeling that if I say or do the wrong things, __ will stop working with me.") are indicative of how vulnerable a client is willing to allow themselves to be and how much they trust that this therapist has created a safe environment that fosters their vulnerability. This is very important in therapeutic settings. Should a client believe that their relationship with their therapist is conditional, then the client will remain guarded in order to protect that positive relationship. However, therapy is intended to create environments in which clients feel comfortable enough to allow themselves to be vulnerable and open and honest, to be able to identify and evaluate any underlying problems or difficulties in their lives. Therapeutic rapport plays a critical role in the therapeutic process and serves as a universal and fundamental component of therapy and is consistent across therapy settings, styles, and orientations (Horvath & Greenberg, 1989; Shirk & Karvey, 2003). These individual findings are suggestive that individuals would be willing to allow themselves to be more vulnerable, and more trusting of their therapist, in the presence of a therapy dog. Although a portion of questions refer to possible future scenarios, it should still be noted that participants within the experimental group still rated

more positive inferences on those future questions based solely on the first and only interaction (e.g. I am confident in ___'s ability to help me). This suggests that when a therapy dog is present, individuals overall rate a greater therapeutic alliance, even on the first, and only, interaction and infer more positive future interactions.

In support of the current literature, it should be noted that participant heart rate and perceived anxiety among both condition groups was lower following the mindfulness exercise when compared to measures of heart rate and self-reported anxiety prior to the mindfulness exercise, providing further evidence supporting that mindfulness serves as a treatment modality for anxiety. There was a statistically significant decline in participant heart rate among both condition groups from the clinical interview and following the mindfulness exercise. This finding supports the current literature that mindfulness is an effective way to slow one's heart rate.

Though there were no statistically significant results regarding participant heart rate and self-reported anxiety between groups, the data does present interesting trends. It should be noted that with a dog present, both the client's heart rate and perceived anxiety declined among all interventions. With regard to perceived anxiety, when the control group exhibited increases in perceived anxiety following a clinical interview, the experimental group noticed a decrease in anxiety. It was expected to see somewhat of an increase as the clinical interview could illicit some anxiety due to the nature of the interview questions. However, the experimental group's perceived anxiety continued to noticeably decrease. With regard to heart rate, both condition groups exhibited decreasing heart rates regardless of intervention, but there is a noticeable lower heart rate among the experimental group than the control group following the clinical interview, which was expected to possibly illicit some anxiety. These differences could benefit real world

applications in that a person may perceive less anxiety in anxiety provoking situations when a therapy dog is present, than when not in the presence of a therapy dog. See Appendix 2.7 and 2.8. These findings provide continued support of the current literature including Blender (2010) who investigated the impact of a therapy dog on physiological reactivity, participant ratings of anxiety, rapport with the interviewer, and motivation and found greater reductions in blood pressure when the dog was present when compared to the control group and suggests that Animal Assisted Interventions (AAI) may be beneficial for people with anxiety.

The utility of these trends may also promote future study or implementation of therapy dogs within the treatment of anxiety. Often, while many individuals seek treatment for or with anxiety as a component of their treatment, their anxiety can serve as an obstacle in treatment. These findings could be particularly useful with regard to trauma. As individuals seek therapy for trauma, or discuss trauma within a therapy session, they may experience decreased levels of state anxiety and perceived anxiety with a therapy dog present, than they would without a therapy dog. While the data from this study shows that following a mindfulness exercise both condition groups are reporting and experiencing similar levels of anxiety by both heart rate and self-report, those with the therapy dog present had less anxiety-provoking experiences prior to the mindfulness exercise. While therapists expect to see decreases of anxiety following mindfulness exercises, the data suggests that the incorporation of therapy dogs could lower a client's anxiety before, or without, implementing the mindfulness exercises. Should future studies continue to show support for the implementation of therapy dogs, the positive effect of therapy dogs could suggest better treatment engagement, treatment adherence, and treatment outcomes.

This study is not without limitations. A potential limitation of the study was the population sample. The sample is solely comprised of college students, in a small rural region, which led to lack of diversity in the predominantly Caucasian sample. In addition, there is also a lack of diversity among participant age. Thus, the results may not be generalized to a larger population. While the current sample size was large, around four times the size of the current literature's largest samples, we still fell slightly short of the desired 86. Having slightly less than perfect power, we may would have seen more significant results should we have had a few more participants, by being able to detect smaller differences. Nevertheless, while some of the results were not statistically significant, they are noticeable and serve practical utility in a clinical setting. While we may not have reached the perfect, ideal number of participants, this study contributes empirical data with great confidence to the literature of AAI/AAT research with such a large sample size, which this area of research currently lacks and serves as one of its main critiques.

Additionally, our measure of therapeutic alliance may serve as a potential limitation. The complete WAI measures working alliance among three facets; agreement on goals, agreement on tasks, and bond. The reasoning behind choosing only the twelve bond items on the WAI is two-fold. There was one, approximately 30-minute, interaction with each participant, thus there was no opportunity to agree on future goals and participate in tasks to achieve those goals. In addition, this study was focused more on the therapeutic relationship rather than goals and tasks. The bond questions on the WAI still had limitations due to a portion of questions referring to possible future scenarios, though it should still be noted that participants within the experimental group still rated more positive inferences on those future questions based solely on the first and only interaction (e.g. I am confident in ___'s ability to help me). This suggests that when a

therapy dog is present, individuals overall rate a greater therapeutic alliance, even on the first, and only, interaction and infer more positive future interactions.

With regard to participant heart rate, although there were decreases among both condition groups, the experimental group did exhibit a higher heart rate on the first and last collection of the heart rate, which could be explained by the participant's movement in petting and interacting with the therapy dog, as encouraged by the handler. This can serve as a limitation due to the movement during interacting with the dog not allowing participant heart rate to reflect any decreases in state anxiety.

With regard to hypothesis 2b, it should be noted that the small effect size could serve as a possible limitation. Although there is a statistically significant decrease between the first heart rate and the third heart rate among all participants regardless of condition, the small effect size shows limited practical utility.

There are limitations with regard to analyzing personality factors as possible covariates of the difference of reported therapeutic alliance between the condition groups. The findings of the ANCOVA must be interpreted with caution due to the lack of confidence among the results due the lack of reliability (α= -.109; Cronbach, 1955) and the lack of significant correlations among the WAI and any of the M5 factors (Pallant, 2010). The remaining assumptions (linear relationship among each of the five factor scores with the WAI scores; homogeneity of the five regression slopes) were not addressed due to the first two assumptions being violated. Thus, any potential effects of personality factors among reported WAI scores could not be confidently parsed out. Refer to Appendix 2.4 and 2.5.

Another possible limitation of this study is the environment of which each session took place. The rooms used for the clinical interview and mindfulness exercise were Western Carolina

University's McKee Assessment and Psychological Services Clinic rooms which consisted of a table, two chairs, two cameras, a microphone, and an observation two-way mirror. This environment is not reflective of a typical therapy room which usually is an inviting room with comfortable furniture. While this environment was not reflective of a typical therapy room, it allowed for consistency and standardization among participant trials, and the results still showed that participants reported greater therapeutic alliance in the presence of a therapy dog, even when the environment was not necessarily inviting and conducive to therapy.

Building from the current study, future research with animal assisted interventions should continue to be studied with larger, more diverse, community samples in a more longitudinal approach. One avenue that could prove beneficial would be to assess groups beyond the university student population that participated across multiple sessions to assess the long-term effects that animal assisted interventions may have throughout the treatment process. Additionally, it could prove beneficial to obtain more in-depth demographic information that would include the participant's race, ethnicity, career, current or prior mental health diagnoses, and any reported preference among animals. This could benefit future applications of animal assisted interventions by examining a participant's like or dislike of animals, or ownership of pets, as any possible covariates, as well as explore possible treatment modalities among particular mental health diagnoses.

The future steps for the current study is to reevaluate personality factors as possible covariates by using the 50-question M5 (M5-50), rather than the 120-question M5 (M5-120), in hopes for greater reliability to have more confidence in the interpretation of the results.

Future research should continue to model their studies to address current critiques of the animal assisted literature by utilizing standardization for replication, sufficient and

heterogeneous samples, and objective measures. More empirical research is needed in the AAI and AAT literature. Animal Assisted Therapy is the incorporation of animals as a goal directed integral part of the therapeutic process while Animal Assisted Interventions are the inclusion of animals as an intervention beneficial to humans. Animal Assisted Interventions are a more temporary inclusion of animals. This study is not redefining AAT and AAI, but it serves to focus research on AAI to better isolate the effect of the therapy dog to later be applied to the practice of AAT. Future research should continue to initially focus on AAI rather than AAT to be able to isolate the effects that therapy animals may have as interventions and later apply those findings within the therapeutic process as AAT.

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APPENDICES

1. Appendix of Measures

1.1 State Anxiety Measure

Client ID: _____ Trial #: _____

When considering anxiety, defined as a feeling of worry, nervousness, or unease, please rate your current anxiety by placing an "X" on the appropriate area of the line below.

No Anxiety Extreme Anxiety

_____

1.2 Structured Interview

Social Anxiety Disorder

Currently, in social situations where you might be observed or evaluated by others or when you are meeting new people, do you feel fearful, anxious, or nervous?
Currently, are you overly concerned that you may do and/or say something that might embarrass or humiliate yourself in front of others, or that others may think badly of you?
If no to the questions above:
Have you ever been anxious in social situations or were you ever overly concerned about embarrassing or humiliating yourself in front of others?
Currently, are you anxious in or do you avoid:
Performance: Giving a speech, introducing yourself to a group, performing in front of others, eating in public.
Social interaction: Attending parties, participating in meetings/classes, speaking with unfamiliar people, talking on the phone, talking to persons of authority, initiating a conversation, maintaining a conversation.
Rate your level of fear and degree of avoidance of identified items on a scale of 0-8.

Specific Phobia

Currently, do you fear or do you avoid such things as:
Animals- Examples include: dogs, snakes, spiders, bees/insects.
Nature/Environment- Examples include: heights, storms, water.
Blood-Injury-Injection- Examples include: blood from minor cut, receiving injections, having blood drawn, invasive dental/medical procedures.

Situations- Examples include: air travel, elevators/enclosed spaces, driving.
Rate your fear/avoidance for each phobia identified on a scale of 0-8.

Obsessive Compulsive Disorder
Currently, are you bothered by thoughts, images, or impulses that keep recurring to you that seem inappropriate or nonsensical but that you can't stop from coming to your mind?
Currently, do you feel driven to repeat some behavior or to repeat something in your mind over and over again to try to feel less uncomfortable?
If no to the questions above:
Have you ever had a time when you were bothered by thoughts, images, or impulses that kept recurring to you that seemed inappropriate or nonsensical?
Have you ever felt driven to repeat some behavior or to repeat something in your mind over and over again to try to feel less comfortable?
Rate your level of distress when _____ enters your mind on a scale of 0-8.

Generalized Anxiety Disorder
Over the last several months, have you been continually worried or anxious about a number of events or activities in your daily life?
What kinds of things did you worry about?
When was the most recent time this occurred?
How much are you bothered by these worries?
Rate your worry on a scale of 0-8 for intensity, frequency, and duration.

1.3 Mindfulness

Breathing Meditation (5:31)
Transcript:
Find a relaxed, comfortable position
Seated on a chair or on the floor, on a cushion
Keep your back upright, but not too tight
Hands resting wherever they're comfortable
Tongue on the roof of your mouth or wherever it's comfortable.
And you can notice your body
From the inside
Noticing the shape of your body, the weight, touch
And let yourself relax
And become curious about your body
Seated here
The sensations of your body
The touch
The connection with the floor
The chair
Relax any areas of tightness or tension
Just breathe
Soften

And now begin to tune into your breath
In your body
Feeling the natural flow of breath
Don't need to do anything to your breath
Not long not short just natural
And notice where you feel your breath in your body
It might be in your abdomen
It may be in your chest or throat
Or in your nostrils
See if you can feel the sensations of breath
One breath at a time
When one breath ends, the next breath begins
Now as you do this you might notice that your mind might start to wander You might start thinking about other things
If this happens this is not a problem
It's very natural
Just notice that your mind has wandered
You can say "thinking" or "wandering" in your head softly
And then gently redirect your attention right back to the breathing
So we'll stay with this for some time in silence
Just a short time
Noticing our breath
From time to time getting lost in thought and returning to our breath See if you can be really kind to yourself in the process
And once again you can notice your body, your whole body, seated here Let yourself relax even more deeply
And then offer yourself some appreciation
For doing this practice today
Whatever that means to you
Finding a sense of ease and wellbeing for yourself and this day [bell rings]

1.4 Working Alliance Inventory – Bond Items

1.	I feel uncomfortable with _____.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
5.	_____ and I understand each other.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
8.	I believe _____ likes me.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
17.	I believe _____ is genuinely concerned for my welfare.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
19.	_____ and I respect each other.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
20.	I feel that _____ is not totally honest about his/her feelings toward me.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
21.	I am confident in _____ 's ability to help me.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
23.	I feel that _____ appreciates me.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
26.	_____ and I trust one another.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
28.	My relationship with _____ is very important to me.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
29.	I have the feeling that if I say or do the wrong things, _____ will stop working with me.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always
36.	I feel _____ cares about me even when I do things that he/she does not approve of.						
	1	2	3	4	5	6	7
	Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always

2. Appendix of Tables

2.1

	Condition	N	Mean	Std. Deviation	Std. Error Mean
WAI Total Score	Experimental Group	41	67.59	8.520	1.331
	Control Group	41	62.10	9.189	1.435

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
WAI Total Score	Equal variances assumed	.045	.833	2.804	80	.006	5.488	1.957	1.593	9.383
	Equal variances not assumed			2.804	79.548	.006	5.488	1.957	1.593	9.383

2.2

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
anx	Sphericity Assumed	89.872	2	44.936	2.764	.066	.033	5.528	.539
	Greenhouse-Geisser	89.872	1.438	62.489	2.764	.084	.033	3.976	.453
	Huynh-Feldt	89.872	1.476	60.902	2.764	.083	.033	4.079	.459
	Lower-bound	89.872	1.000	89.872	2.764	.100	.033	2.764	.376
anx * Condition	Sphericity Assumed	17.753	2	8.877	.546	.580	.007	1.092	.139
	Greenhouse-Geisser	17.753	1.438	12.344	.546	.524	.007	.785	.125
	Huynh-Feldt	17.753	1.476	12.031	.546	.528	.007	.806	.126
	Lower-bound	17.753	1.000	17.753	.546	.462	.007	.546	.113
Error(anx)	Sphericity Assumed	2600.973	160	16.256					
	Greenhouse-Geisser	2600.973	115.056	22.606					
	Huynh-Feldt	2600.973	118.055	22.032					
	Lower-bound	2600.973	80.000	32.512					

a. Computed using alpha = .05

2.3

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
HR	Sphericity Assumed	1839.581	2	919.791	5.270	.006	.062	10.539	.829
	Greenhouse-Geisser	1839.581	1.803	1020.292	5.270	.008	.062	9.501	.799
	Huynh-Feldt	1839.581	1.865	986.315	5.270	.007	.062	9.828	.809
	Lower-bound	1839.581	1.000	1839.581	5.270	.024	.062	5.270	.621
HR * Condition	Sphericity Assumed	102.628	2	51.314	.294	.746	.004	.588	.096
	Greenhouse-Geisser	102.628	1.803	56.921	.294	.723	.004	.530	.094
	Huynh-Feldt	102.628	1.865	55.026	.294	.730	.004	.548	.095
	Lower-bound	102.628	1.000	102.628	.294	.589	.004	.294	.083
Error(HR)	Sphericity Assumed	27927.517	160	174.547					
	Greenhouse-Geisser	27927.517	144.240	193.619					
	Huynh-Feldt	27927.517	149.208	187.171					
	Lower-bound	27927.517	80.000	349.094					

a. Computed using alpha = .05

2.4

Reliability Statistics

Cronbach's Alpha [a]	N of Items
-.109	5

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

2.5

Correlations

		WAI Total Score	M5 Extraversion	M5 Aggreeableness	M5 Conscientiousness	M5 Neuroticism	M5 Openness
WAI Total Score	Pearson Correlation	1	.145	.205	.102	-.151	-.110
	Sig. (2-tailed)		.194	.065	.362	.175	.325
	N	82	82	82	82	82	82
M5 Extraversion	Pearson Correlation	.145	1	.166	.337**	-.467**	-.146
	Sig. (2-tailed)	.194		.136	.002	.000	.190
	N	82	82	82	82	82	82
M5 Aggreeableness	Pearson Correlation	.205	.166	1	.230*	.068	.128
	Sig. (2-tailed)	.065	.136		.038	.546	.251
	N	82	82	82	82	82	82
M5 Conscientiousness	Pearson Correlation	.102	.337**	.230*	1	-.420**	-.352**
	Sig. (2-tailed)	.362	.002	.038		.000	.001
	N	82	82	82	82	82	82
M5 Neuroticism	Pearson Correlation	-.151	-.467**	.068	-.420**	1	.305**
	Sig. (2-tailed)	.175	.000	.546	.000		.005
	N	82	82	82	82	82	82
M5 Openness	Pearson Correlation	-.110	-.146	.128	-.352**	.305**	1
	Sig. (2-tailed)	.325	.190	.251	.001	.005	
	N	82	82	82	82	82	82

**. Correlation is significant at the 0.01 level (2-tailed).

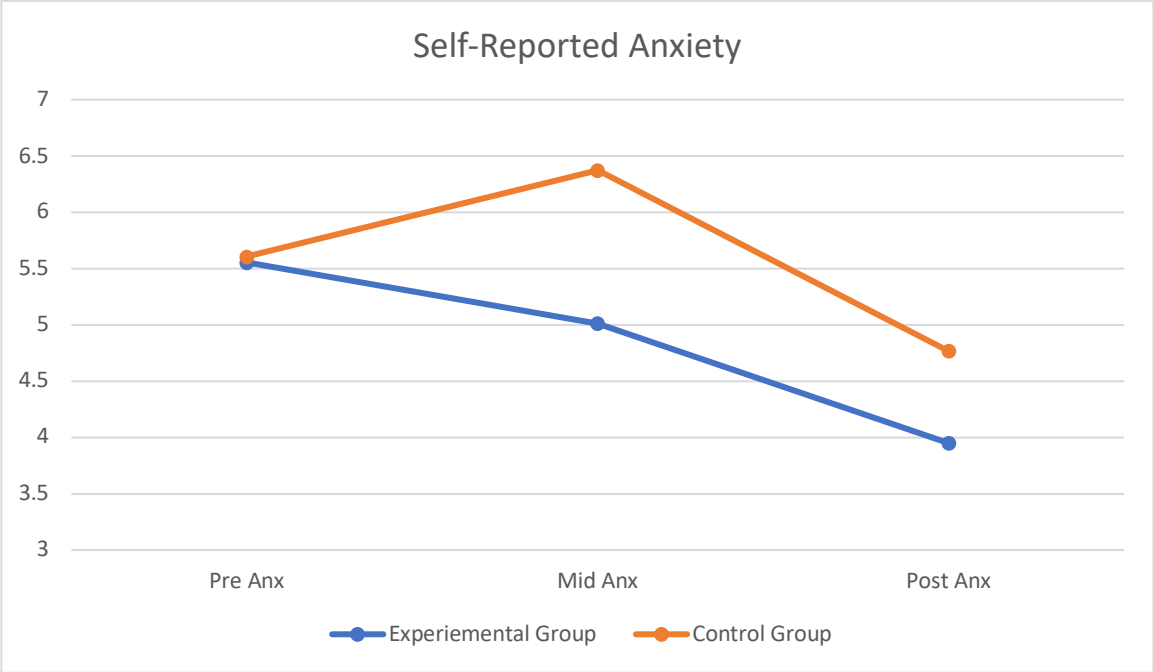
*. Correlation is significant at the 0.05 level (2-tailed).

2.6

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
WAI Question 1 RECODE	Equal variances assumed	.628	.430	1.197	80	.235	.659	.550	-.436	1.753
	Equal variances not assumed			1.197	79.981	.235	.659	.550	-.436	1.753
WAI Question 5	Equal variances assumed	1.626	.206	2.203	80	.030	.732	.332	.071	1.393
	Equal variances not assumed			2.203	75.812	.031	.732	.332	.070	1.393
WAI Question 8	Equal variances assumed	1.307	.256	1.133	80	.260	.366	.323	-.277	1.008
	Equal variances not assumed			1.133	76.835	.261	.366	.323	-.277	1.009
WAI Question 17	Equal variances assumed	.082	.775	.623	80	.535	.195	.313	-.429	.819
	Equal variances not assumed			.623	78.861	.535	.195	.313	-.429	.819
WAI Question 19	Equal variances assumed	17.505	.000	2.879	80	.005	.732	.254	.226	1.237
	Equal variances not assumed			2.879	59.723	.006	.732	.254	.223	1.240
WAI Question 20 RECODE	Equal variances assumed	9.510	.003	-1.515	80	.134	-.659	.435	-1.523	.206
	Equal variances not assumed			-1.515	71.658	.134	-.659	.435	-1.525	.208
WAI Question 21	Equal variances assumed	5.361	.023	2.125	80	.037	.561	.264	.036	1.086
	Equal variances not assumed			2.125	69.586	.037	.561	.264	.035	1.087
WAI Question 23	Equal variances assumed	3.978	.050	2.574	80	.012	.683	.265	.155	1.211
	Equal variances not assumed			2.574	75.094	.012	.683	.265	.154	1.211
WAI Question 26	Equal variances assumed	.004	.948	2.996	80	.004	.902	.301	.303	1.502
	Equal variances not assumed			2.996	79.401	.004	.902	.301	.303	1.502
WAI Question 28	Equal variances assumed	.348	.557	2.310	80	.023	.902	.391	.125	1.680
	Equal variances not assumed			2.310	79.370	.023	.902	.391	.125	1.680
WAI Question 29 RECODE	Equal variances assumed	9.202	.003	1.900	80	.061	.512	.270	-.024	1.049
	Equal variances not assumed			1.900	59.138	.062	.512	.270	-.027	1.052
WAI Question 36	Equal variances assumed	.333	.566	1.333	80	.186	.488	.366	-.240	1.216
	Equal variances not assumed			1.333	79.885	.186	.488	.366	-.240	1.216

2.7

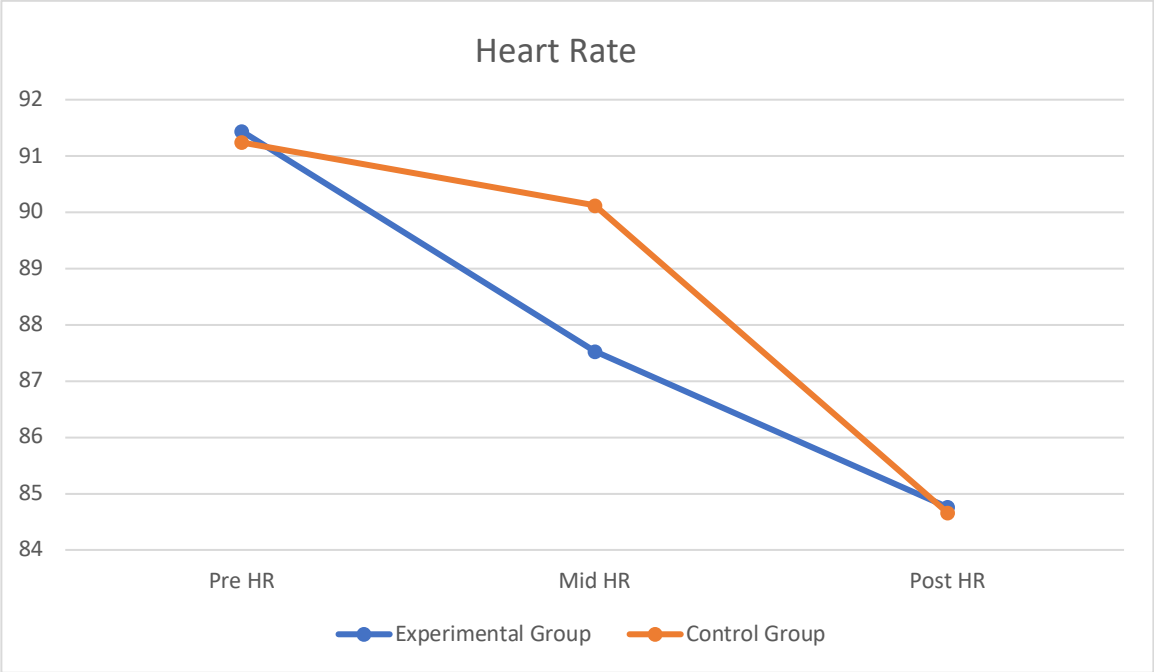


4. Condition * anx

Measure: MEASURE_1

Condition	anx	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Experimental Group	1	5.554	.698	4.164	6.944
	2	5.012	.711	3.597	6.427
	3	3.949	1.049	1.862	6.036
Control Group	1	5.605	.698	4.215	6.995
	2	6.373	.711	4.958	7.788
	3	4.766	1.049	2.679	6.853

2.8



4. Condition * HR

Measure: MEASURE_1

Condition	HR	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Experimental Group	1	91.439	2.604	86.257	96.621
	2	87.529	2.833	81.892	93.166
	3	84.756	2.048	80.681	88.831
Control Group	1	91.244	2.604	86.062	96.426
	2	90.122	2.833	84.485	95.759
	3	84.659	2.048	80.584	88.734

2.9

Levene's Test of Equality of Error Variances[a]

Dependent Variable: WAI Total Score

F	df1	df2	Sig.
.045	1	80	.833

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Condition

Tests of Between-Subjects Effects

Dependent Variable: WAI Total Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	617.378[a]	1	617.378	7.863	.006	.089
Intercept	344762.061	1	344762.061	4390.782	.000	.982
Condition	617.378	1	617.378	7.863	.006	.089
Error	6281.561	80	78.520			
Total	351661.000	82				
Corrected Total	6898.939	81				

2.10

Levene's Test of Equality of Error Variances[a]

Dependent Variable: WAI Total Score

F	df1	df2	Sig.
.383	1	80	.538

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + M5Ext + M5Agg + M5Con + M5Neu + M5Open + Condition

Tests of Between-Subjects Effects

Dependent Variable: WAI Total Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1013.255[a]	6	168.876	2.152	.057	.147
Intercept	1368.244	1	1368.244	17.435	.000	.189
M5Ext	5.023	1	5.023	.064	.801	.001
M5Agg	207.249	1	207.249	2.641	.108	.034
M5Con	.776	1	.776	.010	.921	.000
M5Neu	31.559	1	31.559	.402	.528	.005
M5Open	39.575	1	39.575	.504	.480	.007
Condition	448.595	1	448.595	5.716	.019	.071
Error	5885.684	75	78.476			
Total	351661.000	82				
Corrected Total	6898.939	81				

2.11

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	HR	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
HR	Level 1 vs. Level 2	519.021	1	519.021	1.145	.288	.014	1.145	.185
	Level 2 vs. Level 3	1390.75	1	1390.75	5.477	.022	.064	5.477	.638
HR * Condition	Level 1 vs. Level 2	159.323	1	159.323	.352	.555	.004	.352	.090
	Level 2 vs. Level 3	148.367	1	148.367	.584	.447	.007	.584	.117
Error(HR)	Level 1 vs. Level 2	36254.7	80	453.184					
	Level 2 vs. Level 3	20313.0	80	253.912					

a. Computed using alpha = .05

2.12

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Anx	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Anx	Level 1 vs. Level 2	1.055	1	1.055	.081	.776	.001	.081	.059
	Level 2 vs. Level 3	146.169	1	146.169	3.103	.082	.037	3.103	.413
Anx * Condition	Level 1 vs. Level 2	35.167	1	35.167	2.711	.104	.033	2.711	.370
	Level 2 vs. Level 3	6.054	1	6.054	.129	.721	.002	.129	.064
Error(Anx)	Level 1 vs. Level 2	1037.61	80	12.970					
	Level 2 vs. Level 3	3768.50	80	47.106					

a. Computed using alpha = .05